

ABSTRACT

An eye tracking system employs a first line camera that is configured to track horizontal eye motion and a second line camera that is configured to track vertical eye motion. Output signals from the two line cameras are applied to a processor which identifies and tracks eye motion, using a correlation or edge detection algorithm on boundaries between the sclera, iris and pupil. The system includes multiple controlled light sources and the horizontal and vertical line cameras are configured to track eye motion in response to light stimulus provided by the light sources according to a programmed algorithm. Eye motion for an individual is collected and compared to a model in order to obtain a measure of fitness for the individual. The device may also be used to derive inputs to a computer system based on eye motion or gaze direction.